TESTING MEDIATORS OF A COUPLE-BASED EATING DISORDER PREVENTION PROGRAM

A Dissertation

by

ANA LORENA RAMIREZ

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2012

Major Subject: Psychology

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Approved by:

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ABSTRACT

Testing Mediators of a Couple-based Eating Disorder Prevention Program. (August 2012)

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Body image dissatisfaction and eating disorders are more prevalent in today's society than ever, making the prevention of eating disorders and its symptoms crucial for women's health. A couple-based eating disorder prevention program was developed based on the dual pathway model of eating disorders and some efficacy has been established. The current study explored the program's mechanisms of change by testing mediators (thin ideal internalization and body dissatisfaction) expected to mediate the effects of the program on three outcome variables (dieting, negative affect, and bulimic symptoms). Although none of the mediated paths were significant, results of the study were overall consistent with previous research and provided further support for the efficacy of the prevention program. In addition to these variables, effects of the prevention on relationship variables (relationship satisfaction, attachment anxiety and avoidance, and commitment) were explored. Finally, relationship intimacy, measured by an event-contingent interaction, was found to have an effect on an important eating disorder risk factor. Implications of the present study and future directions for the prevention and treatment of eating disorders are discussed.

DEDICATION

I would like to dedicate this dissertation to my family for their love and support throughout my educational career. Your inspiration and continued support pushed me to move forward despite facing many obstacles. To my mother, for her continued encouragement and for having confidence in my ability to achieve my dreams even during the times when I may have questioned it myself. To my father, who sparked inquisition in me and shared his love of knowledge with me from the start. To both of you for making the difficult decision to relocate our family in order to provide me with the opportunity to achieve my dreams. Les agradezco por todos sus sacrificios y los quiero con todo mi corazón.

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INTRODUCTION

Eating disorders are one of the psychiatric problems most frequently faced by young women (Stice, 2001b). They are characterized by a persistent course, co-occurrence with other psychopathology, medical complications, and elevated mortality (Thompson & Stice, 2001). Research suggests that there has been an increase in the rates of eating disorders over the past several decades (Stice, 1994). Eating disorders are a severe and debilitating illness, but research shows that just having some eating disorder symptoms can also be impairing. For example, body dissatisfaction is more prevalent than eating disorders and has been found to be associated with psychological distress, functional impairment, preoccupation with appearance, and unnecessary cosmetic surgery (Hoffman & Brownell, 1997; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Given the debilitating impact of eating disorders on women's health, the prevention of eating disorders and associated symptoms is a focus of researchers and professionals alike.

Extensive empirical evidence demonstrates that the development of body image dissatisfaction as a key prospective risk factor for eating disorders (Stice, Schupak-Neuberg, Shaw & Stein, 1994). In addition, risk factors that affect the development of body image dissatisfaction, although they have less proximal distance to eating disorder development, are also crucial to the development of eating pathology (Stice, 2002). Most of these risk factors have been investigated within the context of a sociocultural

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This dissertation follows the style of *Body Image.*

model. These factors include the thin ideal body image for women, the centrality of appearance in the female gender role, and the importance of appearance of women's societal success (Striegel-Moore, Silberstein, & Rodin, 1986). The thin ideal portrayed as the standard in our society plays a significant role in the development of body image dissatisfaction.

From a sociocultural model, eating disorders have been described as a product of increasing pressure for women in our society to achieve an ultra-slender body (Stice & Agras, 1998; Wilson & Eldrege, 1992). Research suggests that sociocultural pressures can come from various sources, such as the media, family members, peers, and dating partners (Stice, Spangle, & Agras, 2001; Stice & Whitenton, 2002). Pressures to be thin can take a variety of forms, such as glorification of ultra-slender models, direct messages that one should lose weight, and more indirect pressures to conform to the thin ideal (Stice, Maxfield, & Wells, 2003). Exposure to the thin ideal portrayed in the media has been linked to heightened feelings of depression, unhappiness, shame, guilt, stress, decreased levels of confidence, and increased body image dissatisfaction (Stice & Shaw, 1994). Moreover, thin-ideal internalization has predicted eating disorder diagnoses (Garner, Garfinkel, Rockert, & Olmstead, 1987; Kendler, MacLean, Neale, & Kessler 1991).

Different mechanisms of how thin-ideal internalization may lead to eating disorders have been explored. Empirical evidence suggests that internalization of the thin ideal has an effect on eating pathology primarily through body dissatisfaction (Stice et al., 1994), but can directly promote dieting even in the absence of body dissatisfaction

(Stice, 2001a). Attitudinal acceptance of the thin ideal is believed to contribute to body dissatisfaction because of a social comparison process where women compare themselves to idealized images and judge themselves as not meeting social expectations (Stice et al., 2001; Stice & Whitenton, 2002). The fact that an increase in eating pathology over the last several decades has coincided with a decrease in the weight of the ideal-body for women portrayed in the media provides additional support for the sociocultural model of eating disorders (Stice & Shaw, 1994).

Several etiological models based on these sociocultural factors have been proposed. Two models in particular have received the most theoretical and research attention. Thompson et al. (1999) proposed a model in which peer, parental, and media pressures to be thin are thought to result in social comparison processes and an internalization of the thin ideal, which all contribute to the development of body dissatisfaction and eventually eating pathology. Similarly, the dual pathway model (Stice, 1994, 2001a) integrates several single-predictor theories of bulimia, including body dissatisfaction (Rosen, 1992), dietary restraint (Polivy & Herman, 1985), and affect regulation models (Heatherton & Baumeister, 1991). This etiological model explains several mechanisms between sociocultural factors and the expression of bulimia (Stice, 1994, 2001a). According to the dual pathway model (Figure 1), internalization of the thin ideal contributes to body dissatisfaction through the elevated pressures to be thin from family, peers, and the media. Theoretically, increased body dissatisfaction then fosters dieting and negative affect. Dieting and negative affect may consequently increase the risk for bulimic pathology. Body dissatisfaction is thought to lead to dieting

because of the common belief that dieting is an effective weight control technique. Furthermore, body dissatisfaction can also contribute to negative affect because appearance is seen as a central dimension for women in our culture. Dieting is thought to directly foster negative affect because of failures often associated with weight control efforts and the impact of caloric deprivation on mood. Dieting may also result in a greater risk for disordered eating because individuals may binge to counteract the effects of caloric deprivation; for example, breaking strict dietary rules can result in disinhibited eating. Negative affect could also foster bulimic symptoms as it is believed that behaviors such as bingeing may provide comfort and distraction from negative emotions (Stice, 1994, 2001a; Stice & Presnell, 2007).

The dual pathway model has received extensive empirical evidence. An initial test of the dual pathway model of eating disorders revealed that, overall, the model accounted for 71 % of the variance in bulimic symptomatology (Stice, Nemeroff, & Shaw, 1996). Perceived pressure to be thin, thin ideal internalization, body dissatisfaction, dieting, and negative affect have all predicted the onset of binge eating and compensatory behaviors (Irving, 1990; Stice et al., 1996; Stice & Agras, 1998; Stice, 2001a). A study found that dietary restraint and negative affect significantly mediated the relation between body dissatisfaction and bulimic behavior, with both variables being equally important mediators of bulimic behaviors (Shepherd & Ricciardelli, 1998). Overall, there is prospective evidence for nearly all of the hypothesized mediational relations suggested in the dual pathway model (Stice, 2001a). Research findings from independent labs over the past decade collectively suggest that thin-ideal internalization

is a causal risk factor for body image and eating disturbances and that it appears to operate in conjunction with other established risk factors for these outcomes, including dieting and negative affect (Thompson & Stice, 2001). Furthermore, the dual pathway model appears to account for subclinical as well as clinical levels of bulimia (Stice, Ziemba, Margolis, & Flick, 1996; Van Strien, Engels, Van Leeuwe, & Snoek, 2005). This is an important implication for the examination of the present couple-based eating disorder prevention program.

As previously stated, preventing the development of eating disorders is important because these contribute to a wide variety of adverse outcomes. Empirical evidence supporting the dual pathway model suggests that prevention programs targeting the variables in the model should be successful in decreasing both the risk factors for eating pathology and eating pathology itself. Prevention programs have typically provided psychoeducational information about symptoms of eating disorders, consequences for these behaviors, suspected risk factors for eating pathology, and healthy weight control techniques (Burton & Stice, 2006; Stice & Ragan, 2002). However, until recently, none had resulted in significant positive effects because simply providing information does not appear to be enough to produce attitudinal or behavioral change (Stice, Mazotti, Weibel, & Agras, 2000). Subsequently, prevention programs moved towards attitudinal change and skill acquisition in addition to psychoeducation, creating a shift in the ineffective trend. A recent meta-analysis reported that 51% of available eating disorder prevention programs reduce eating disorder risk factors and 29% reduce current or future eating pathology (Stice, Shaw, & Marti, 2007). Although a variety of eating disorder

prevention programs have been developed in the past decade, only half have resulted in positive effects. Furthermore, only two of these prevention programs have produced positive effects that replicated across different labs. The most current generation of eating disorder prevention programs include selective programs that target high risk individuals with interactive exercises focusing on risk factors that predict the onset of eating pathology, such as body dissatisfaction and thin-ideal internalization (Stice & Shaw, 2004).

The dissonance prevention program, developed by Stice et al. (2000), was the first eating disorder prevention program to find positive effects and has since received strong support for the reduction in bulimic pathology and known risk factors in various controlled trials (Becker, Smith, & Ciao, 2005, 2006; Becker, Bull, Schaumberg, Cauble, & Franco, 2008; Matusek, Wendt, & Wiseman, 2004; Perez, Becker, & Ramirez, 2010; Stice, Chase, Stormer, & Appel, 2001; Stice, Trost, & Chase, 2003; Stice, Shaw, Burton, & Wade, 2006; Stice, Presnell, Gau, & Shaw, 2007; Stice, Marti, Spoor, Presnell, & Shaw, 2008). These programs are based on the dual pathway model and attempt to reduce thin ideal internalization by using a dissonance-based approach. Cognitive dissonance theory (Festinger, 1957) posits that the possession of inconsistent cognitions creates psychological discomfort that motivates people to restore consistency. This dissonance, in turn, usually leads individuals to alter their behaviors or attitudes in order to reduce this inconsistency. Dissonance-based programs induce women who adopted the thin ideal to take a stance against it by participating in a series of verbal, written, and behavioral exercises that critique the thin ideal (Stice et al., 2000a; 2001). It is important

that individuals feel that they voluntarily assume this counterattitudinal stance in order to create true dissonance. Effects from these programs suggest that the dissonance-based targeted prevention reduces bulimic pathology and known risk factors for eating disturbances. Moreover, studies suggest that the effectiveness of this intervention is not restricted to college-aged population (Stice et al., 2003) and support its utility in naturalistic settings (Becker et al., 2008; Perez et al., 2010).

Overall, empirical evidence suggests that programs that actively require attitudinal and behavioral modification may be more effective than psychoeducational material in producing persistent behavior change. Positive effects of the dissonance-based programs have been achieved using a single-session workshop format (Matusak et al., 2004). Aside from reducing risk factors and disordered eating, these programs have decreased the risk for onset of future eating disorder symptoms and obesity. The effects of dissonance-based interventions have received enough empirical support to be termed efficacious and these effects have persisted through a 3 year follow-up; no other eating disorder prevention program has these long-lasting effects (Stice et al., 2008).

As discussed above, a plethora of research has found sociocultural pressures to be important contributing factors to body dissatisfaction and eating pathology. Theoretically, sociocultural pressures are manifest in proximal social institutions such as family, peers, and romantic partners (Stice et al., 1996). Given that significant others can contribute to body dissatisfaction, it is important to consider the finding that interpersonal processes have been consistently implicated in the development and maintenance of body dissatisfaction. There is evidence indicating that individuals with

eating disorders frequently report problems with interpersonal relationships (O'Mahony & Hollwey, 1995; Pyle, Mitchell, & Ekert, 1981) and that disordered eating behavior itself creates difficulties in interpersonal relationships, interfering with the individual's time and involvement with others (Johnson & Larson, 1982). From an interpersonal standpoint, thin-ideal internalization may result because individuals internalize attitudes that are approved of or socially reinforced by significant or respected others. Family, peers, and media are thought to reinforce the thin ideal image for women via comments or actions that encourage dieting, criticize women based on weight, and glorify ultra-slender models (Thompson & Stice, 2001).

Among these significant interpersonal relationships, romantic partners are considered to be important sources of influence. Research assessing the influence of romantic partners on body image, however, is limited. A *Psychology Today* national survey (Garner, 1997) found that 40% of women and 29% of men surveyed said that their partner's opinion of their appearance was a factor in fostering body dissatisfaction. Preliminary evidence suggests that in adult men and women, romantic partners are likely to exert a large amount of influence on body image and thin-ideal internalization (Markey, Markey, & Birch, 2001). The role of romantic partners can be illustrated in two ways: fears related to being negatively evaluated by one's partner and concerns about finding a partner's body acceptable or pleasing.

Women's concerns about weight are not unfounded as research indicates that men place a great deal of importance on women's body size and shape when they initiate romantic relationships (Markey, Markey, & Birch, 2004). However, inaccurate beliefs

regarding body size preferences are often held by many women and these may play a large role in the development and maintenance of body image problems (Tantleff-Dunn & Thompson, 1995). Some research indicates that women misinterpret men's standards of bodily attractiveness (Markey et al., 2004; Markey & Markey, 2006; Thompson & Tantleff 1992); while men are likely to be observant of women's bodies, they may not actually be as concerned about the relative thinness of their bodies as women believe. Nonetheless, weight related criticism from spouses has been linked to lower self-esteem (St. Peter, 1997) and lower body-esteem (McKinley, 1999). As a partner criticizes a woman about her body, the partner may be implying directly or indirectly preferences for a different (i.e., thinner) figure (Befort, Robinson Kurpius, Hull-Blanks, Nicpon, Huser, & Sollenberger, 2001). Furthermore, even if men tend to be satisfied with their partner's appearance, it is possible that they do not communicate their general satisfaction to their partner. Research suggests that men might actually buffer their partners from the glorified thin ideal by explicitly communicating their body preference (Markey et al., 2004). Given these findings, the current prevention program was designed to allow romantic partners to communicate their actual beliefs and preferences regarding body image.

Most of the findings discussed above only include women since research has shown that the drive for thinness is relatively rare in boys and men (McCreary & Sasses, 2000). This line of research, however, also has found that men often pick the muscular mesomorphic shape as their ideal and that men also believe women look for muscularity in their ideal man. Internalization of the ideal body type in males may similarly lead to

body dissatisfaction because discrepancy between one's ideal physique and one's actual physique is believed to cause body distress. Moreover, like the drive for thinness, the drive for muscularity can have detrimental physical and psychological consequences such as bingeing, use of steroids, and weight related health problems (McCreary & Sasse, 2000). Research suggests that body-esteem plays a less central role in men's romantic and sexual relationship experiences when compared to women (Ambwani & Strauss, 2007). However, there may be a potential confound to this interpretation, that is, society frowns upon men's expression of bodily dissatisfaction and therefore "real men" do not whine about their physical appearance (Pope, Phillips, & Olivardia, 2002). These findings suggest that interventions which include discussions about the distorted way the media present women's bodies need to be balanced with a similar discussion of how the media presents men's bodies (Bearman, Presnell, Martinez, & Stice, 2006). An intervention in which an individual's romantic partner participates would address a strongly established sociocultural risk factor for eating disorders as well as open a line of communication between partners in which they may address a variety of issues related to body image and their relationship, both as individuals and as a couple.

As discussed above, romantic partners can have an effect on body dissatisfaction and thin-ideal internalization. However, there is also a small body of research linking body dissatisfaction and eating disorders to relationships satisfaction itself. Women with eating concerns report less satisfaction, comfort, and closeness in romantic relationships and tend to express a functional view of sexuality (Evans & Wertheim, 1998). On the other hand, Weller & Dziegielewski (2004) found that a positive, supportive relationship

with a romantic partner is positively associated with women's body image and negatively associated with their anxiety about their physical appearance. Body dissatisfaction can also have an effect on physical intimacy in romantic relationships. Body image concerns and eating disorders are generally associated with fear of intimacy in romantic relationships (Cash, Theriault, & Annis, 2004; Pruitt, Kappius, & Gorman, 1992). Approximately one third of college student women indicated experiencing body image self-consciousness during physical intimacy with a partner. Body image problems during physical intimacy can result in increased relationship-related negative events and decreased relationship satisfaction for women. Furthermore, emotional intimacy and openness have been found to be lacking in marriages in which the wife has an eating disorder (Van den Broucke, Vandereycken, & Vertommen, 1995).

As the available research suggests, romantic partners and the relationship itself may play an important role in the development of body image dissatisfaction and vice versa. Furthermore, in any research involving romantic relationships, assessment of only one partner is less than ideal. Previous research also suggests that prevention programs should educate men and women alike about how they may contribute to mass discontent by uncritically accepting the thin ideal (Befort et al., 2001). It is possible that men are afraid to approach this topic with their significant others, and in the absence of communication about these issues, women may be making inaccurate assumptions about how their romantic partners view their bodies (Markey & Markey, 2006). A couple-based eating disorder prevention program has the potential to address several of these

concerns more directly than a program targeting individuals, particularly if a great deal of importance is placed on a partner's opinion.

An eating disorder prevention program for couples was developed, based on Stice's dual pathway model. This couple-based prevention closely mirrors the dissonance-based programs described above. In addition, the prevention program targets both romantic partners in order to directly address a partner's influence on body image as well as its effect on relationship satisfaction. This allows couples to openly discuss various subjects related to body image, the thin ideal, and relationship satisfaction. A preliminary study on the couple-based eating disorder prevention program found similar results to those of the widely supported dissonance-based programs described earlier (Ramirez, Perez, & Taylor, 2012). Compared to an assessment-only comparison group, women who completed the prevention program with their partner exhibited significant decreases in thin ideal internalization, and state and trait body dissatisfaction. However, levels of relationship satisfaction remained unchanged. With regards to eating disorder symptoms, women in the prevention program had significant decreases in eating disorder symptoms across time. Unexpectedly, the comparison group also reported decreases in eating disorder symptoms across time prohibiting the decrease in eating disorder symptoms in the prevention group from being attributed solely to the program. Although initial efficacy of the couple-based eating disorders prevention program was established, this study had several limitations. First, the relationship satisfaction measure used assesses global relationship satisfaction, making small changes in relationship quality that occur during short periods of time difficult to detect. Future research

including a measure of relationship satisfaction that includes specific components of relationship satisfaction (e.g., commitment, attachment, intimacy) and is more state rather than trait-like may be able to detect smaller changes in relationship satisfaction variables if they occur. Another limitation to the previous study was the chosen eating disorder symptom scale, which is a screener for eating disorder symptoms that has been found to have some validity issues. Past efficacy and effectiveness trials on dissonance-based eating disorder prevention programs have used diagnostic measures which tend to better capture the diagnostic spectrum of eating disorders and are more sensitive to change across time. Finally, in the previous efficacy study, the comparison group did not represent a true control group given the lack of random assignment and significant differences that existed between the two groups. A new procedure for the comparison group was developed in an attempt to ensure both groups were equal in all aspects except the comparison-prevention group assignment.

The aim of the current study was two-fold. The first was two improve upon the past study by adding diagnostic measures of eating disorder symptoms that are consistent with past research and measures of specific characteristics related to relationship satisfaction that may be more sensitive to change. The second aim of the current study was to examine the mechanisms of change in the effects of the couple-based eating disorder prevention program. Mediation analyses provide a test of the mechanisms that underlie intervention effects (Coie, Watt, West, Hawkins, Asarnow, Markman, et al., 1993). For example, if the intervention decreased eating disorder symptoms in the absence of changes in the hypothesized mediators or decreased the

mediators in the absence of effects on bulimic symptoms, this would suggest a problem with the intervention theory. Previous studies have identified thin-ideal internalization (Stice et al., 2007) and body dissatisfaction (Seidel, Presnell, & Rosenfield, 2009) as partial mediators of the effects of dissonance-based preventions on bulimic symptoms. The mediators that theoretically account for the intervention effects on the main outcomes, as explained by the dual pathway model, were closely examined following guidelines used in previous studies that examined mechanisms of change in dissonance-based interventions (Stice et al., 2007). Mediation analyses may also suggest ways to further improve the present couple-based prevention program.

Furthermore, in order to replicate findings of previous dissonance-based programs, it was necessary to extend the follow-up period of the present program. Previous dissonance-based programs have found lasting effects of their interventions for up to three years following the intervention (Stice et al., 2007). In addition to testing mediators, the present study extended the follow-up period to include both 1-month and 6-month assessments to explore the long-term effects of the prevention program.

Hypotheses

It was hypothesized that thin-ideal internalization and body dissatisfaction would partially mediate the effects of the couple-based prevention program on eating disorder symptoms and its risk factors (Figure 2). More specifically, reductions in thin-ideal internalization were expected to mediate the effects of the prevention program, versus the comparison condition, on reductions in dieting, negative affect and bulimic

symptoms. In addition, body dissatisfaction was tested as another potential mediator of the prevention effects on dieting, negative affect, and bulimic symptoms.

Additional relationship outcomes explored in the present study included relationship satisfaction, commitment, attachment anxiety, and attachment avoidance. It was hypothesized that participants in the prevention condition would show positive changes in relationship satisfaction and commitment and a decrease in attachment anxiety and avoidance in comparison to participants in the control group. A measure of intimacy was also explored as a predictor of thin-ideal internalization. More specifically, experiencing a higher level of intimacy during the partner interaction (described below in Method section) was expected to predict less pressure to fulfill the thin ideal and a decrease in the level of importance placed on information about beauty ideals presented by the media.

METHOD

Participants

Participants were recruited from Introductory Psychology courses at Texas A&M University. To be eligible for the study, participants were required to be in a dating relationship; no specific length of time in relationship was required. If a partner was not enrolled in the Introduction to Psychology course, they voluntarily agreed to participate in the study. Two same-sex couples were excluded from the analyses because the prevention program was created with opposite-sex couples in mind. The final sample consisted of 94 heterosexual couples. To simplify analyses, only data from the female partners were used as mediating and outcome variables. Sixty-five percent of the sample identified themselves as "White", 21% as "Hispanic or Latina", 4% as "Asian", 7% as "Mixed" and 2% as "Other." The majority of participants were freshmen (57%), 28% were sophomores, 11% were juniors, and 3% were seniors. Participants' age ranged from 17 to 29 years with a mean age of 19.03 years. The length of relationship ranged from 1 to 72 months with an average relationship length of 16.79 months.

Measures

Relationship Satisfaction. The Quality Marriage Index (QMI; Norton, 1983) is a 6-item self-report measure of relationship quality as a whole. Items are rated on a 7-point Likert scale (0 = very strongly disagree to 6 = very strongly agree). In a sample of couples planning to marry, the QMI showed high reliability with an alpha coefficient of .75 before marriage, .90 after a year of marriage, and .88 nine months after that (Noller & Feeney, 1994). For the present study, the scale was edited so that items asked about

the quality of the ‘relationship’ rather than quality of the ‘marriage’ since most couples in this sample were not married. In this sample, internal consistency was high, with a Cronbach’s alpha of .94.

Commitment. The measure of relationship commitment was created from twelve items derived from Arriaga and Agnew (2001), each with a 7-point response scale (1 = do not agree at all, 7 = agree completely). These items reflected general aspects of commitment as well as specific components, including psychological attachment (3 items; e.g., “I feel emotionally attached to our relationship—very strongly connected to my partner”), long-term orientation (3 items; e.g., “When I make plans about future events in my life, I implicitly assume that I will be in this relationship”), and intention to persist (3 items; e.g., “I intend to stay in this relationship”). The measure of relationship commitment was based on the average of the 12 items. Internal consistency for the scale in this sample was poor ($\alpha = .58$).

Romantic Attachment. The Experiences in Close Relationships (ECR; Brennan, Clark, & Shaver, 1998) is a measure used to assess individual differences with respect to attachment-related anxiety (i.e., the extent to which people are insecure vs. secure about the extent to which their partner's availability and responsiveness) and attachment-related avoidance (i.e., the extent to which people are uncomfortable being close to others vs. secure depending on others). Internal consistency for both scales has been established to be around .90 (Fraley, Waller, & Brennan, 2000). Internal consistency in this sample was poor for the avoidance scale ($\alpha = .51$) and acceptable for the anxious scale ($\alpha = .72$).

Intimacy. The Interaction Record Form-Intimacy (IRF-I; Prager & Buhrmester, 1998) is a 17-item interaction rating form that was completed by participants for the event-contingent interaction (which was designed to elicit pressure related to the thin ideal for the female partner) that they were asked to complete as part of the study procedure. Items are rated on a 4-point Likert scale (4 = very true of this interaction to 1 = not at all true of this interaction). Items were summed to reflect the average level of intimacy perceived by participants during the interaction, which refers to how much self-revelation, understanding and positive affect characterized the interaction. Good internal consistency has been established for this scale (α = .85) in previous research. Internal consistency for the current sample, however, was lower (α =.67).

Thin-Ideal Internalization. The Sociocultural Attitudes towards Appearance Questionnaire-3 (SATAQ-3; Thompson, van den Berg, Roehring, Guarda, & Heinberg, 2004) is a 30-item self-report measure of societal influences on body image and eating disturbances. The measure consists of four subscales: (1) Information, (2) Pressures, (3) Internalization-General, and (4) Internalization-Athletic. Items are rated on a 5-point Likert scale (‘completely disagree’ to ‘completely agree’). In a sample of college women, all subscales and total scale evidenced great reliability: Information (α = .94), Pressures (α = .94), Internalization-General (α = .92), Internalization-Athletic (α = .89) and Total scale score (α = .94). Furthermore, this scale has shown excellent convergent validity with measures of body image and eating disturbance (Thompson et al., 2004). Overall, internal consistency for this sample was good for all four subscales: Information

(α = .91), Pressures (α = .93), Internalization-General (α = .93), Internalization-Athletic (α = .79).

The Ideal-Body Stereotype Scale-Revised (IBSS-R, Stice et al., 1996) is a 10-item measure of thin ideal internalization. Items are rated on a 5-point Likert scale ('strongly disagree' to 'strongly agree'). The IBSS-R has shown acceptable internal consistency (α = .91), test-retest reliability (*r* = .80), and convergent and predictive validity (Stice & Agras, 1998; Stice et al., 1996). Internal consistency in the current sample was good (α = .88).

Body Dissatisfaction. The Body Image States Scale (BISS; Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002) is a 6-item self-report measure of an individual's current evaluative/affective body image states. Items are rated on 9-point Likert scales. The scale is presented in a negative-to-positive direction for half of the items and positive-to-negative for the other half. Scores on each dimension range from 1-9, with higher scores indicating more favorable body image states. In a college sample, the internal consistency alpha coefficient was .77 for women and .72 for men. The 2-to-3-week test-retest reliability for the same sample was .69 for women and .68 for men (Cash et al., 2002). In the current sample, internal consistency was good, with a Cronbach's alpha of .84.

The Figure Rating Scale (FRS; Stunkard, Sorenson, & Schlusinger, 1983) is a self-report measure of trait body image disturbance. The measure consists of seven female schematic figures, ranging in size from very thin to very overweight; participants can be asked to choose the figure that most closely represents their ideal figure (Ideal),

figure that reflects how they think they look (Think), figure that reflects how they feel most of the time (Feel), or figure that they think is most preferred by men/women (PM/PW). Female participants were asked to complete the FRS first asking them to circle the silhouette that they think most closely represents their own figure and a second time, asking them to circle the silhouette that most clearly represents their ideal figure. The difference between the two silhouettes was used as a measure of body dissatisfaction (negative scores indicate that their perceived silhouette is smaller than their ideal figure; positive scores indicated that their perceived silhouette is larger than their ideal figure). In a college sample, the test-retest reliability coefficients for females were .71 for Ideal, .89 for Think, .83 for Feel, and .60 for PM (Thompson & Altabe, 1991). Internal consistency for the two items in this sample was acceptable ($\alpha = .74$).

Dieting. The Dutch Restrained Eating Scale (DRES; Van Strien, Frijters, Van Staveren, Defares, & Deurenberg, 1986) was used to assess dieting. The DRES is a 10-item measure where participants indicated the frequency of dieting behaviors using a Likert scale ranging from 1 = never to 5 = always. This scale has shown internal consistency ($\alpha = .95$), 2-week test-retest reliability ($r = .82$) and predictive validity for bulimic symptom onset (Stice et al., 2004; Van Strien et al., 1986). Internal consistency for this sample was similar ($\alpha = .94$).

Eating Disorder Symptoms. The Eating Disorder Diagnostic Scale (EDDS; Stice, Telch, & Rizvi, 2000) was used to assess diagnostic symptoms of bulimia nervosa. Ten items assessing frequency of binge eating, frequency of compensatory behaviors (e.g., vomiting, laxative or diuretic abuse, fasting, and excessive exercise), and overevaluation

of weight and shape were summed to form an overall eating disorder symptom composite. The EDDS has shown high agreement with eating disorder diagnoses made with the Eating Disorder Examination (Fairburn & Cooper, 1993), internal consistency, (α = .89), 1-week test-retest reliability (r = .87), sensitivity to detecting intervention effects, and predictive validity for future onset of eating pathology and depression (Stice et al., 2000; 2004). Internal consistency in this sample was similar to that of previous studies (α = .83).

Negative Affect. The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a 20-item trait affect scale designed to measure characteristic experiences of positive and negative affect. Items are organized into 2 subscales: a ten item Positive affect (PA) and a ten item Negative Affect subscale (NA). Participants were asked to rate the extent to which they generally experience a particular mood stage (e.g., distressed, upset, scared, irritable) on a 5-point Likert scale ('very slightly or not at all' to 'extremely'). The 10 positive adjectives are added to an estimation of positive affect and the 10 negative adjectives are added to an estimation of negative affect. In a college student sample, internal consistency alpha reliabilities are .88 for the PA scale and .87 for the NA scale. Test-retest reliability is .68 for the PA scale and .71 for the NA scale (Watson et al., 1988). Only the NA scale was included in the analyses for the current study. Internal consistency for the NA scale in this sample was acceptable, with a Cronbach's alpha of .84.

Procedure

The current study was posted on the Psychology research website. To be eligible for participation, participants were required to be in a current dating relationship and instructed to bring their dating partner to both parts of the study. No name or further description of the study was provided other than its duration (2 sessions, 2 hours each). Upon arrival for their study, participants were randomly assigned to one of the two conditions (comparison or prevention). All participants, regardless of the condition they were assigned, were required to attend two separate 2-hour sessions. During the consent process, participants were invited to participate in an online survey at 1-month follow up (Time 3) and at 6-month follow up (Time 4); participation in the follow up survey was entirely voluntary.

Upon arrival for their scheduled session, both partners provided informed consent and completed a series of questionnaires (Time 1). All questionnaires were completed in private and in separate rooms in order to prevent the presence of their partner from influencing their answers. The procedures for each of the two condition groups are outlined below.

Comparison Condition. After Time 1 questionnaires were completed, partners in this group were reunited and instructed to participate in a set of four 5-10 minute interactions. Undergraduate research assistants guided couples through each of the interactions, in which they were instructed to a) flirt as if they had just met, b) criticize a habit they dislike, c) provide praise to their partner, and d) discuss an embarrassing story. After each of the brief interactions, partners were asked to complete a brief

computer Stroop task separately, which served as a transition into the next interaction. When all interactions were completed, partners scheduled the second session of the study for approximately a week later.

Upon arrival for their second session, couples in the comparison group separately completed a brief set of questionnaires on the relationship variables and then were instructed to play board games for 45-minutes. Couples were then guided through an event contingent interaction role play in which they were instructed to interact as they normally would in a scenario created to elicit some pressure related to the thin ideal for the female partner. The female partner was instructed to communicate her thoughts/feelings to her partner; couples were instructed to engage in the conversation for 10-15 minutes. Following this interaction, participants were instructed to complete the 17-item intimacy scale and to discuss (as they felt comfortable) their experience with the perceived level of support, understanding, and pressure they may received from their partners. Finally, participants were separated to complete Time 2 questionnaires.

Prevention Condition. After Time 1 questionnaires were completed, partners in this group were reunited to participate in the first session of the prevention program. Sessions were guided by upper undergraduate psychology students who received extensive training on basic clinical skills and on the application of the prevention manual. The student facilitators were required to attend weekly supervision meetings. During these supervision meetings, tapes were reviewed, student facilitators received feedback, and concerns were addressed as necessary. The content of each prevention session is described below.

Session 1. As soon as participants were reunited with their partner (immediately after completing the Time 1 assessment), the student facilitators provided a brief summary of the guidelines to follow during the sessions (i.e., be respectful toward partner). After completing an icebreaker game, participants engaged in a series of discussion questions regarding the beauty ideal standards imposed for men (muscular-ideal) and women (thin-ideal) in our society, the costs associated with attempting to achieve these ideals for others, themselves, and the couple. Throughout this discussion, the student facilitators made a clear distinction between the thin-ideal/muscular-ideal and the healthy-ideal. Participants then engaged in discussion questions about the types of behaviors that may perpetuate the beauty ideal standards within the couple's relationship. Following this discussion, participants were asked to complete a worksheet in which they are asked to write down a list of compliments. The student facilitators aided the couple in determining whether a compliment is either inappropriate because its content supports and/or focuses the thin-ideal/muscular-ideal or appropriate because it does not support and/or focus on the ideals. The last discussion of the session focused on brief responses that challenge the thin-ideal/muscular-ideal. Each partner was provided with a brief scenario and asked to respond in a way that challenges the thin-ideal/muscular-ideal based on what they learned in the session's previous discussions. Couples were then asked to discuss what they can do as a couple to resist or challenge the thin-ideal/muscular-ideal. The session ended with a homework assignment to be completed before Session 2 in which each partner was asked to stand in front of the mirror (separately) in as little clothing as they feel comfortable and list as many of their

own positive attributes. Then participants were asked to list as many of their partner's positive attributes while thinking about their partner's bodies. Finally, couples scheduled their second session for approximately a week later.

Session 2. Upon arrival for the second session, couples in the prevention group separately completed a brief set of questionnaires on relationship variables and then were reunited to begin the second session. The session began with the student facilitator prompting participants to discuss the homework assignment by asking a series of questions allowing the couple to discuss some of the pressures about appearance imposed by themselves, their partner, others or society in general. After discussing the homework assignment, the student facilitator provided an overview of the last session and allowed participants to ask questions. The student facilitator then transitioned into a series of discussion questions related to how body image dissatisfaction, which is affected by the various issues discussed in Session 1, may affect their relationship, including intimacy. Following this discussion, participants engaged in a game which encouraged participants to discuss different factors, other than physical ones, that are important in a dating relationship. After this game, two role plays were presented by student facilitators in which participants were instructed to challenge the thin ideal using information from the two sessions. Couples were then guided through an event contingent interaction role play (same as comparison group) in which they were instructed to interact as they normally would in a scenario created to elicit some pressure about the thin ideal for the female partner. The female partner was instructed to communicate her thoughts/feelings to her partner and to engage in the conversation for

10-15 minutes. Following this role play, participants were instructed to complete the 17-item intimacy interaction rating form and to discuss with one another their experience with their perceived level of support, understanding, and pressure they may have felt from their partners (as much as they felt comfortable sharing). The final discussion focused on making a distinction between healthy and unhealthy dieting and exercising. Participants were asked to discuss topics such as their beliefs about what constitutes healthy and unhealthy dieting and exercising, whether they engage in any of these behaviors, how it affects their dating relationship, and how each partner can be supportive of the other. The student facilitator aided participants in making the distinction between healthy and unhealthy behaviors. After this discussion, student facilitators encouraged participants to continue the mirror exercise given as a homework assignment during Session 1 and gave participants the opportunity to make any last statements or ask questions. Finally, partners were separated to complete Time 2 questionnaires.

Statistical Analyses

Regression analyses were conducted to test for the hypothesized mediation effects outlined in Figure 2. To obtain the coefficient for path ‘a’, a regression equation was created for each of the hypothesized mediators where the dependent variable was the mediator at each of the three post-session time points (T2, T3,T4). Two predictors were entered: condition and the corresponding mediator at T1.

To obtain the coefficients for paths ‘b’ and ‘c’, a regression equation was created for each of the hypothesized outcome variables and their respective mediators where the

dependent variable was the outcome at each of the post-session time points (T2, T3, T4). Two predictors were entered: condition and the mediator at the respective time point (T2, T3, T4):

To test for mediation, the asymmetric distribution of products test (MacKinnon, Lockwood, & Williams, 2004) was used. This method calculates the size of the mediated pathway (a*b) and then computes confidence intervals for a*b. If the 95% confidence interval does not include 0, the size of the mediated effect is considered significant (MacKinnon et al., 2004). The program PRODCLIN (MacKinnon, Fritz, Williams, & Lockwood, 2007) was used to calculate the asymmetric confidence limits for the analyses above. This asymmetric distribution of products test was chosen over the more frequently used Baron and Kenny (1986) approach because it has greater power and more appropriate Type I error rates than the Baron and Kenny approach (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

RESULTS

Preliminary Analyses

Participant attrition between sessions 1 and 2 was minimal; 10 of the 94 couples dropped out of the study prior to the second session. Given that the Time 3 and Time 4 follow up assessments were voluntary, it was expected that only a percentage of participants would actually complete these. Twenty-nine females completed Time 3 assessments and 20 females completed Time 4 assessments.

Overall, the two condition groups did not differ significantly on demographic variables. No significant age differences were found between individuals in the Comparison group (M = 18.80, SD = 0.95) and Prevention group (M = 19.25, SD = 2.16; $t(90) = -1.29$, *NS*). No significant differences in BMI were found between individuals in the Comparison group (M = 21.78, SD = 2.51) and Prevention group (M = 21.51, SD = 3.54; $t(91) = 0.43$, *NS*). However, a significant relationship length difference was found between individuals in the Comparison group (M = 11.11 months, SD = 11.79) and Prevention group (M = 21.98 months, SD = 19.39; $t(78.57) = -3.27$, $p < .01$). Participants assigned to the Prevention group happened to be in a dating relationship approximately 10 months longer than participants assigned to the Comparison group.

Means for each of the mediator and outcome variables across the four time points are presented in Table 1. A significant difference in relationship satisfaction was found between the two groups at baseline ($M_{comparison}$ = 34.33, $SD_{comparison}$ = 7.44; $M_{prevention}$ = 37.06, $SD_{prevention}$ = 4.95; $t(92) = -2.11$, $p < .05$) with the Prevention group reporting

slightly higher relationship satisfaction than the Comparison group; no other differences between the two groups were found in any of the other dependent variables (Table 2).

Mediators

Multilevel analyses were conducted separately for the prevention and comparison groups to further explore the prevention program had an effect on any of the risk factors outlined by the dual pathway model. All mediators and outcomes were tested to determine whether these changed over the course of the study. Multilevel analyses, using Time as the predictor and each of the mediators/outcomes as the dependent variable, were conducted with only participants in the prevention group. Results from these analyses suggest that the mediating variables (thin-ideal internalization and body dissatisfaction) changed over time for participants who completed the prevention program. The Time variable was significant and in the expected direction for the following SATAQ-3 subscales: Information (B = -1.516, SE = .677, $p < .05$), Pressures (B = -1.799, SE = .441, $p < .0001$), Internalization-General (B = -2.159, SE = .590, $p < .001$), and Internalization-Athletic (B = -.873, SE = .364, $p < .05$). These results suggest that for participants in the prevention group, the level of importance placed on information presented by the media regarding beauty ideals and the extent to which the general and athletic thin ideal is internalized, decreased over the course of the study. Over the course of baseline to the six-month follow up assessments, these decreases were observed for participants assigned to the prevention group. With the exception of the SATAQ-3 Pressures subscale (B = -1.045, SE = .481, $p < .05$), these changes across

time were not observed when the same analyses were conducted with participants in the comparison group.

In addition, significant change across time was found for state body dissatisfaction (B = -2.185, SE = .544, $p < .001$). These results suggest that over the course of the study, a decrease in state body dissatisfaction was observed in participants assigned to the prevention group. More importantly, changes in body dissatisfaction across time were not observed in participants assigned to the comparison group. Together, these analyses provide support for differences between the two condition groups to move forward with the mediation analyses. Overall, these results provide some support for the efficacy of the prevention program.

Each mediator was examined individually using regression analyses to determine if the hypothesized mediators accounted for the relationship between condition and outcome variables at each of the three follow up assessments (Time 2, Time 3, Time 4). Mediating effects for each of the hypothesized mediators are presented in Table 3 for the Time 2 outcomes, Table 4 for the Time 3 outcomes and Table 5 for the Time 4 outcomes. Path ‘a’ in each of these tables outline the relation between Condition and the corresponding Mediator variable tested. Path ‘b’ outlines the relation between the corresponding Mediator variable tested and the corresponding Outcome variable tested. Path ‘c’ outlines the relation between Condition and the corresponding Outcome variable. All of these paths are required to calculate the mediated effect (a*b) using the program PRODCLIN (described in Method section).

It was hypothesized that thin-ideal internalization would partially mediate the effects of the prevention on reductions in dieting, negative affect and bulimic symptoms. No thin-ideal internalization variables mediated the effects of the prevention program on dieting, negative affect or bulimic symptoms at any time point.

Furthermore, it was hypothesized that body dissatisfaction would mediate the effects of the prevention on dieting, negative affect and bulimic symptoms. Results did not support this hypothesis; none of the mediated pathways for body dissatisfaction were significant across any of the different time points on which mediators and outcomes were assessed.

Although none of the hypothesized mediated pathways were significant, many of the 'b' paths (which identify whether a mediator predicts an outcome) were significant (see Tables 3, 4, and 5) across different time points. That the mediators are significant predictors of the outcomes (while controlling for condition) is still consistent with the dual pathway model (Figure 1). Risk factors identified in the model (thin-ideal internalization and body dissatisfaction) overall predicted the outcome variables (dieting, negative affect, and bulimic symptoms). These results provide support for the theory behind the model, although the lack of significant mediation results may signal a problem with the prevention program.

Relationship Outcome Variables

Regression analyses were conducted to explore whether condition predicted the hypothesized relationship outcome variables. Condition marginally predicted global relationship satisfaction at Time 2 ($\beta = 0.357$, $t(83) = 1.872$, $p = .065$, $R^2 = .185$) with

participants in the prevention group showing a significant increase in relationship satisfaction immediately after completing the prevention program. This finding is consistent with the hypothesis that participants in the prevention group would show positive changes in relationship satisfaction. However, condition did not predict relationship satisfaction at Time 3 (β = -0.178, t(26) = -0.861, p = .398) or Time 4 (β = -0.265, t(18) = -1.047, p = .311). It is possible that participants in the prevention group felt more satisfied with their relationship immediately after participating in the prevention but returned to their baseline level of relationship satisfaction after one and six months post-participation.

It was also hypothesized that participants in the prevention group would show increases in commitment and decreases in attachment anxiety and avoidance after completing the program. No support was found for this hypothesis: condition was not a significant predictor of attachment anxiety at Time 2 (β = -0.058, t(72) = -0.971, p = .335), Time 3 (β = -0.120, t(22) = -0.674, p = .508) or Time 4 (β = -0.110, t(12) = -0.382, p = .710). Similarly, condition did not significantly predict attachment avoidance at Time 2 (β = 0.020, t(72) = 0.203, p = .840), Time 3 (β = 0.004, t(22) = 0.017, p = .986), or Time 4 (β = -0.058, t(12) = -0.208, p = .840). Commitment was also not significantly predicted by condition for Time 2 (β = 0.030, t(72) = 0.491, p = .625), Time 3 (β = 0.263, t(22) = 1.491, p = .152) or Time 4 (β = 0.095, t(12) = 0.437, p = .671). Overall, the hypothesized effects of the prevention program on these relationship variables were not supported.

Finally, intimacy was explored as a potential predictor of thin-ideal internalization in the context of the interaction task outlined in the Method section. Thin-ideal internalization was tested as the outcome variable for the interaction task because the content of the interaction on which the intimacy measure is based focused on the thin ideal and pressures to achieve it. Intimacy only predicted the level of importance placed on information about beauty ideals presented by the media at Time 4 (β = 0.826, $t(7)$ = 3.584, $p < .05$, R^2 = .682) and marginally predicted pressures to be thin also only at Time 4 (β = 0.612, $t(7)$ = 1.898, p = .107, R^2 = .375). These results partially support the hypothesis that experiencing a higher level of intimacy while interacting with a partner would predict less pressure to fulfill the thin ideal and a decrease in the level of importance placed on information about beauty ideals presented by the media. Given that these results were found only at the 6-month follow up, it appears that intimacy may have an important effect on thin-ideal internalization but it may take time before these effects are observed.

DISCUSSION

Improvements in the area of eating disorder prevention require the rigorous task of closely examining mechanisms of change. Understanding why and how prevention programs produce their effects is important because this can strengthen their efficacy. Recent studies have supported thin-ideal internalization and body dissatisfaction as partial mediators for dissonance-based prevention programs (Stice, et al., 2007; Seidel et al., 2009). Results of the current study did not entirely replicate previous research findings examining mediators in dissonance-based eating disorder prevention programs, which have found that thin-ideal internalization and body dissatisfaction partially mediate the relationship between the effects of the preventions and outcome variables outlined in the dual pathway model (dieting, negative affect, bulimic symptoms).

In addition, it is important to consider that mediation effects can occur even if there is an unexpected effect in participants who did not complete the prevention program. Seidel et al. (2009) concluded in their mediation study that "finding similar relations in a control group would not be unexpected (e.g., if someone in a comparison group decreased in body dissatisfaction for some reason, we would still expect a subsequent decrease in bulimic symptoms), nor would finding similar relations in control group detract or invalidate these findings for the dissonance intervention group." The present study differed from Seidel et al. (2009) in the approach to data analyses, where the authors analyzed the mechanisms of change by using data from participants who completed their intervention but were not compared to a control group. Stice et al. (2007) took a different approach by including condition (control vs. intervention) as the

first variable in their mediation paths. Both researchers outline advantages and disadvantages of their approach. Given that the couple-based prevention is a new program, it seemed appropriate to include condition as a the first variable in the hypothesized mediated paths in order to further establish the efficacy of the program by comparing it to a control group. However, it is possible that the structure of the sessions for the control group had some unexpected positive effect on the mediating and outcome variables that made it more difficult to detect mediating changes.

When assessed separately across time, participants in the prevention group exhibited changes in thin-ideal internalization and state body dissatisfaction whereas the comparison group did not. These results provide some additional support for the efficacy of the prevention program. In addition, although the multilevel analyses allowed for the use of missing data, it is necessary to replicate these findings using a larger sample because this would provide more confidence that the power to detect true differences between the control and prevention groups is present.

Related to this matter is a concern about confounding variables. One of the major changes that were made from the original couple-based prevention study design is the amount of interaction that occurred between partners in either condition. Initially, an assessment-only comparison group was used to assess differences between participants assigned to the prevention and participants who did not participate in the program. However, one of the main concerns that arose from having a comparison group where partners did not interact with one another was that the mere interaction between partners could be the cause for the changes observed rather than the prevention itself. The current

study design was revised so that couples spent an equal amount interacting with each other regardless of which condition they were assigned to. It is possible that this revision, however, resulted in some unintended changes for women in the comparison group that may complicate the process of picking up differences in mediators and outcome variables between the two groups. It is possible that changes in other variables (not measured in this study) may have occurred and in turn affected the ability to tease apart the mechanisms of change. Another likely explanation could be that a Hawthorne effect occurred amongst participants in the comparison group. Individuals in this group may have changed their behavior simply due to the attention they received from participating in an experiment. A third potential explanation is social desirability. The questions in this study had face validity and it is possible that the control group participants answered the questions in the manner they thought I wanted.

On the other hand, it is plausible that guided interaction between partners has benefits in and of itself. Participants may feel more supported by their partner even when they are not exposed to the prevention program simply due to the experience of being guided through a series of interactions with their partner. This would be consistent with the finding that participants in the comparison group reported a significant decrease in the amount of pressure they feel to fulfill the thin ideal. If women had a positive experience during the guided interaction with their partner, perhaps the supportive experience was translated into less intense feelings of pressure to fulfill the beauty ideals. This finding may suggest that a simplified structured interaction with a romantic partner (assuming the relationship is already viewed positively) may result in decreases

in important eating disorder risk factors. A brief interaction between partners alone may still have potential benefits and would be easier to disseminate than lengthier intervention programs.

Despite efforts to replicate mediation effects found in previous intervention research, the present study did not find any support for the hypothesized mediation paths. One of the key difference between the couple-based prevention program and other programs that have found significant mediation effects for body dissatisfaction and thin-ideal internalization is the addition of discussions surrounding the muscular ideal and the impact of eating disorder risk factors on the relationship itself. Though this program attempted to replicate the other dissonance prevention programs as closely as possible, the addition of these topics takes a significant portion of time that would otherwise focus on challenging the thin ideal through various exercises and interactions in the other programs. In addition, the procedure between other programs and the couple-based prevention is significantly different. Other programs recruit groups of women to participate in the prevention; the present study recruited single couples rather than groups. The effects of the prevention may be stronger when a group of individuals participate together because women may find it easier to identify with other women in a similar position. Women's willingness and motivation to participate in interactions that may be inconsistent with some of their beliefs could be higher if other women are also participating and supporting one another. It would be interesting to explore a similar procedure for the couple-based prevention where groups of couples are recruited to participate in the program and compare the effects between that procedure and the one

presented here. Finally, there is a major difference between the current sample and the samples used in previous research examining mediators in dissonance programs. Research on dissonance-based prevention programs has almost exclusively recruited women who are at high risk for developing eating disorders (Stice et al., 2007; Seidel et al., 2009). The present study did not specifically target high risk women but rather used a college sample. This difference in sample can have an impact in the amount of change observed in the eating disorder risk factors targeted by the prevention programs, with more room for improvement in these variables in a sample that reports higher levels of these risk factors at baseline. Consistent with this notion, effect sizes of the couple-based prevention program thus far (Ramirez et al., 2012) have been overall smaller than effect sizes found in previous dissonance prevention research (Stice et al., 2003; Stice et al., 2006; Becker et al., 2006, 2008; Perez et al., 2010).

In assessing the mechanisms of change, limited support was found for the hypothesized mediated paths. However, an important finding of the present study that requires attention is the significant 'b' path coefficients, which establish a relationship between the mediators and outcome variables. Particularly at Time 2, the majority of the hypothesized mediators significantly predicted the outcome variables in the expected direction. As pressure to be thin increased, for example, so did dieting and bulimic symptoms. Higher internalization of the general thin ideal predicted more dieting, negative affect, and bulimic symptoms. In addition, higher body dissatisfaction (both state and trait) significantly predicted more dieting, negative affect and bulimic symptoms. Most importantly, about half of these effects were maintained one month

later and about a quarter of these were maintained six months later (although this comparison is made with caution given the small sample size at the one-month and six-month follow ups). Negative affect was the one outcome variable that was not consistently predicted by the mediators. This is not surprising given that research in this area has debated the inclusion of negative affect in the dual pathway model (Stice et al., 2007).

A final aim of the present study was to explore the effects of the prevention program on specific relationship variables. In a previous study that examined the effects of the couple-based prevention program, the only relationship variable that was measured was global relationship satisfaction (Ramirez et al., 2012). Measures of global relationship satisfaction are considered less sensitive, which can make it difficult to detect small changes in level of satisfaction when they do occur (Bernier & Matte-Gagné, 2011). It was important to add measures of other variables that are more sensitive to smaller changes but are still related to relationship satisfaction. Although commitment, attachment anxiety, and attachment avoidance were not predicted by the condition to which participants were assigned, intimacy appeared to play a significant role in predicting the level of importance female partners placed on information presented by the media about beauty ideals. This finding suggests that if interactions between romantic partners regarding topics related to the pressures and unrealistic standards placed on women by society to fulfill a certain ideal result in higher feelings of intimacy for female partners, a decrease in this important risk factor can occur. The effect of relationship intimacy on thin-ideal internalization was observed only at the six-

month follow up. This may suggest that the effects of relationship variables on some eating disorder risk factors are present but can take longer to detect, however, this implication is also made with caution given the high attrition that occurred at the one-month and six-month follow ups. Two implications are derived from this finding. First, the inclusion of dating partners in eating disorder prevention programs is supported. Second, designing more guided interactions such as the one included in this prevention program may strengthen this effect. Role play scenarios are important components of dissonance prevention programs. There may be an added benefit in designing more role plays to include as central pieces of the couple-based prevention in future studies. In the future, it also seems appropriate to explore additional scenarios where other significant individuals, such as friends or family members of women at high risk for developing eating disorders, can participate.

The couple-based prevention program was created based on the idea that pressure from loved ones, in the form of comments or certain interactions, can be a risk factor for eating disorders (Befort et al., 2001). The program was created to encourage participation of romantic partners, who are often a source of pressure. However, the main goal of the couple-based prevention remains the same as that of other dissonance-based programs, which target eating disorder risk factors identified in the dual pathway model. In keeping this goal in mind, the event-contingent interaction outlined in the procedure of the prevention was created so that the female partner is presented with a scenario that causes some pressure to internalize the thin ideal. It was expected that male partners who were in the prevention group would take this opportunity to show their

female partners a higher level of understanding, sensitivity, and acceptance because these topics were discussed across the two sessions of the program. In turn, it was hoped that female participants would show decreases in thin ideal internalization. As previously stated, results found at the six-month follow up support this idea; participants reported placing less importance on information related to beauty ideals and to a lesser extent, showed a decrease in the amount of pressure they felt to fulfill the societal ideals. In addition, qualitative data indicates that interactions between couples in the comparison group were marked by more negative comments in comparison to couples in the prevention group. Comparison couples argued more frequently during the event-contingent interaction and the female partners expressed more negative feelings and discomfort, both verbally and nonverbally. Prevention couples used information that had been discussed throughout the course of the program to structure their interaction and inform their comments. Male partners in this group appeared more confident and comfortable in responding to women's questions and comments related to the thin ideal. At least during the event-contingent interaction portion of the prevention program, both partners in this group appeared to learn more appropriate and empathic techniques for discussing a topic that is normally difficult to approach.

The findings are mixed with regards to the inclusion of partners in strengthening the amount of dissonance that is induced in participants that are exposed to prevention programs. The fact that intimacy predicted thin-ideal internalization only at the six-month mark, however, suggests that partner-induced effects may take longer to develop. Nonetheless, it appears that the more intimacy participants felt during the interaction

with their partner, the less they subscribed to the thin ideal. However, this was viewed at Time 4, with only a very small subset of participants. This findings needs to be replicated before it can be fully established as this sample is limited because of the high attrition rate at the one-month and six-month follow up assessments. However, if it is consistently observed, it can have important implications for the prevention and treatment of eating disorders.

The couple-based prevention does not yield the same results as other dissonance prevention programs. The couple-based prevention program should be done only when other dissonance programs cannot be implemented. Results from this study suggest, however, that the mechanisms of change may be different from those of other dissonance programs. Whereas other dissonance programs appear to change outcome variables (such as dieting, negative affect, and bulimic symptoms) through thin-ideal internalization and body dissatisfaction, the couple-based prevention appears to have an effect on thin-ideal internalization through the increase in relationship intimacy achieved during interactions between partners. But again, these findings are preliminary.

Finally, the program was well-received by college students. In general, participants assigned to the prevention group reported having a positive experience. Male and female partners alike provided positive feedback about the discussions, interactions, and activities included in the program. The structure and duration of the two-session program was also well-received. In addition, participants felt comfortable with a student peer facilitating the study sessions. Student facilitators were able to successfully lead the prevention program independently, with minimal supervision

required once they received reasonable training. This can facilitate the procedure for continued dissemination of the program where limited resources may be available.

Limitations

The current study has a few limitations. First, the sample was limited to a college student population, limiting the extent to which the prevention may generalize to other populations. College students are a convenient sample, however, college-aged individuals also tend to be at a high risk for the development of body image dissatisfaction and eating disorders. Second, the couples in this study were mostly dating college students where frequency of dissolution of the relationship might be high. As mentioned in the introduction, this prevention program is still thought to be useful for the female participant even if the relationship dissolves. By role modeling and facilitating communication about body image and eating disorder symptoms among a couple, female participants might be more likely to generalize these learned skills to other relationships. As previously stated, the current study did not target a high risk population as other mediation studies have (Stice et al., 2007; Seidel et al., 2009) which can pose a restriction of range in the risk factors and eating disordered variables that were examined and make it more difficult to detect the effects of the intervention. Finally, attrition during the follow-up period and/or participants declining to participate in the follow-up creates problems related to power, which can also make it difficult to detect effects if they do in fact exist.

SUMMARY AND CONCLUSIONS

In conclusion, the present study increases our level of understanding of the couple-based prevention program. It appears that there is some significant value in having participants interact with their partner as a means to decreasing particular eating disorder risk factors. Consistent with cognitive dissonance theory, taking a more active stance against the unrealistic societal standards had a significant effect in the extent to which women internalized the thin ideal. Moreover, this effect may be achieved indirectly through increased relationship intimacy, providing additional support for the important role that significant others play in the prevention and treatment of eating disorders.

Future research for the couple-based prevention program still needs to address whether the program performs at the same level as other more established dissonance programs in a sample of women who are at high risk for the development of eating disorders. In addition, despite the limited support found for mediating effects, the effect of intimacy on thin-ideal internalization was discovered by the inclusion of dating partners. Future directions for improvement of the couple-based program can include the addition of other interactions designed to increase intimacy between partners. More specifically, interactions that focus more closely on scenarios related to body dissatisfaction, another important risk factor, should be explored. Finally, as more research becomes available in the area of eating disorder prevention, it will be essential to investigate possible moderators in the future. Exploring moderators may provide

additional guidance for determining which individuals would benefit most from which intervention.

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APPENDIX A

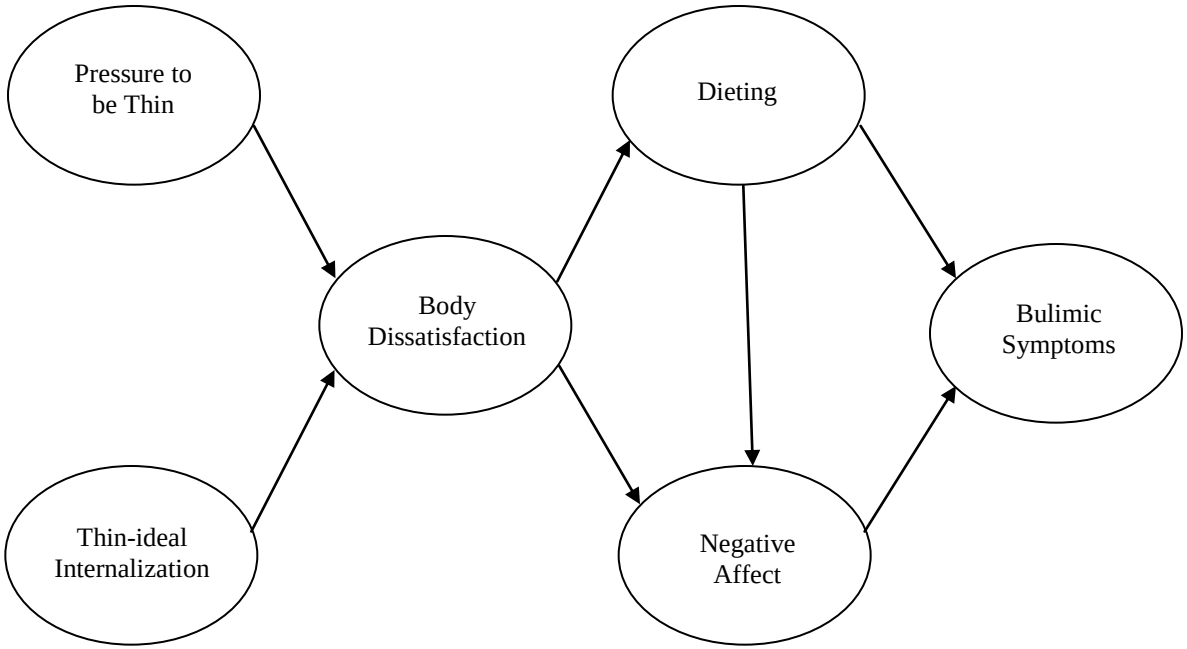

Figure 1. Dual pathway etiological model of eating disorders (Stice, 1994, 2001).

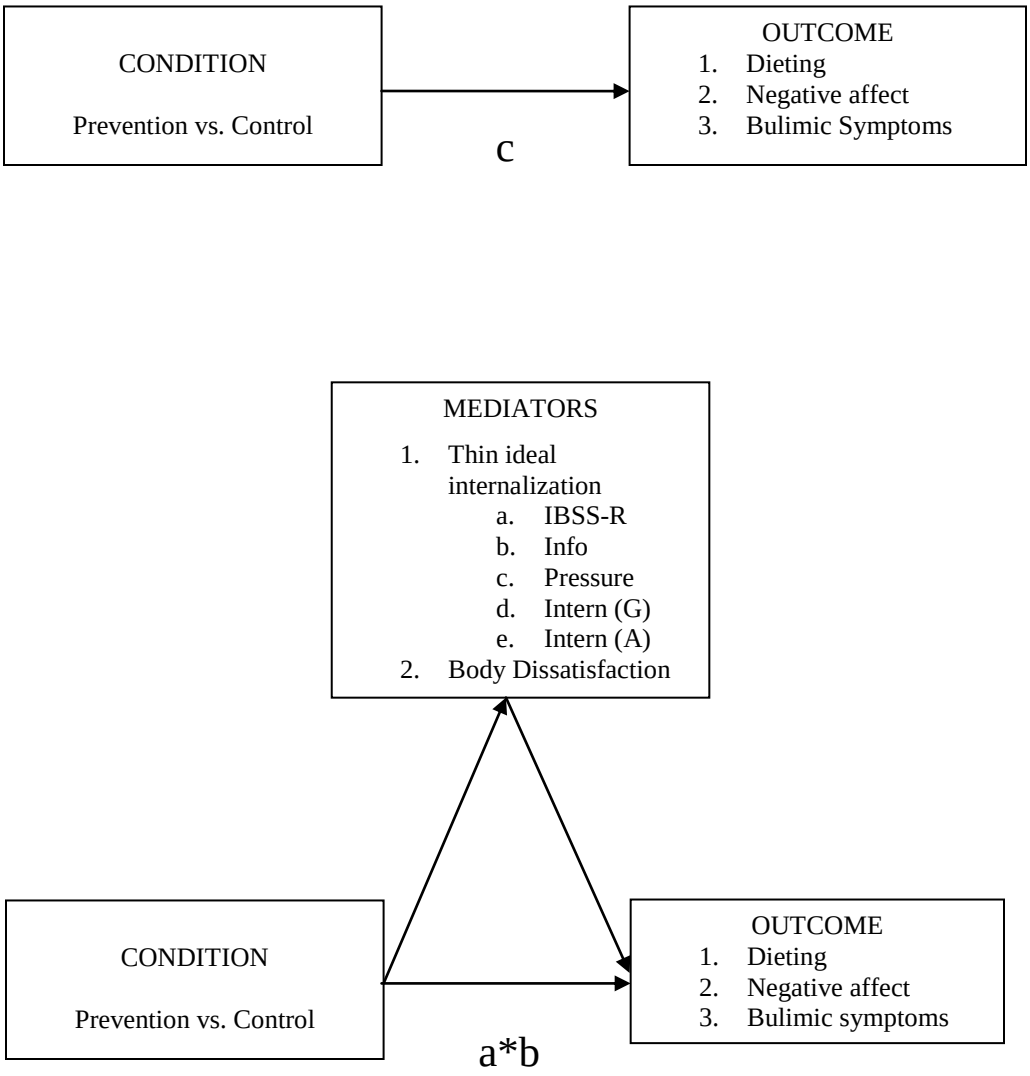

Figure 2. Figure representation of hypothesized mediators of the couple-based eating disorder prevention program.

APPENDIX B

Table 1

Sample Size and Means across Four Assessment Time Points for Both Condition Groups

	Comparison Group				Prevention Group				Effect Size					
	Time 1	Time 2	Time 3	Time 4	Time 1	Time 2	Time 3	Time 4	Comparison			Prevention		
	N=45	*N*=39	*N*=16	*N*=9	*N*=49	*N*=45	*N*=13	*N*=11	**T1-2**	**T1-3**	**T1-4**	**T1-2**	**T1-3**	**T1-4**
Measures	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*d*	*d*	*d*	*d*	*d*	*d*
QMI														
Relationship Sat.	34.33	33.00	36.93	38.89	37.06	36.89	34.58	34.00	-.18	.43	.82	-.03	-.30	-.32
MOC														
Commitment	6.22	6.11	6.20	6.31	6.25	6.19	6.89	6.64	-.14	-.03	.11	-.09	1.04	.64
ECR														
Anxious Attach.	3.71	3.71	3.61	3.72	3.81	3.77	3.68	4.09	.00	-.18	.02	-.07	-.20	.38
Avoidant Attach.	4.64	4.64	4.74	4.73	4.71	4.69	4.71	4.64	.00	.22	.29	-.06	.00	-.20
SATAQ-3														
Information	23.91	21.74	19.75	20.55	25.26	23.42	23.85	20.18	-.26	-.50	-.41	-.23	-.15	-.62
Pressures	21.49	20.20	15.75	17.00	21.71	19.64	16.61	17.82	-.15	-.70	-.51	-.29	-.71	-.55
Internalization (Thin)	27.67	25.56	21.19	23.22	28.28	25.78	22.15	22.72	-.23	-.73	-.54	-.30	-.69	-.62
Internalization (Athl)	15.47	14.85	12.75	14.55	14.20	13.87	11.92	11.91	-.15	-.61	-.22	-.08	-.52	-.54
IBSS-R														
Thin Ideal	2.62	2.59	2.60	2.35	2.69	2.69	2.48	2.38	-.03	-.02	-.43	.00	-.28	-.34
PANAS														
Negative Affect	18.62	18.18	19.12	15.33	20.14	18.93	18.46	18.09	-.07	.07	-.58	-.19	-.27	-.27
BISS														
State Body Diss.	33.42	36.15	34.06	37.78	31.67	36.33	36.92	36.81	.31	.07	.07	.52	.60	.58
FRS														
Trait Body Diss.	0.67	0.70	1.00	0.67	0.59	0.62	0.69	1.00	.04	.31	.00	.04	.07	.33
DRES														
Dieting	2.70	2.53	2.26	1.93	2.63	2.44	2.33	2.67	-.17	-.41	-.82	-.22	-.28	.04
EDDS														
Bulimic Symp.	14.11	14.03	16.60	13.33	13.80	11.95	18.50	19.20	-.01	.28	-.09	-.20	.49	.51

Table 2

Means for All Dependent Variables for Control and Prevention Groups at Initial Assessment

	Condition					
Measures	Comparison *M*	*SD*	Prevention *M*	*SD*	*t*	*df*
QMI						
Relationship Satisfaction	34.33	7.44	37.06	4.95	-2.11*	92
MOC						
Commitment	6.22	0.74	6.25	0.67	-0.19	75
ECR						
Anxious Attachment	3.71	0.54	3.81	0.55	-0.81	75
Avoidant Attachment	4.64	0.37	4.71	0.33	-0.89	75
SATAQ-3						
Information	23.91	8.03	25.26	7.43	-0.85	92
Pressures	21.49	8.31	21.71	6.94	-0.14	92
Internalization (General)	27.67	8.80	28.28	8.33	-0.35	92
Internalization (Athlete)	15.47	4.15	14.20	3.86	1.53	92
IBSS-R						
Thin Ideal	2.62	0.77	2.69	.75	-0.46	91
PANAS						
Negative Affect	18.62	5.95	20.14	6.31	-1.19	92
BISS						
State Body Dissatisfaction	33.42	8.65	31.67	8.77	0.97	92
FRS						
Trait Body Dissatisfaction	0.67	0.61	0.59	0.76	0.55	91
DRES						
Dieting	2.70	1.00	2.63	0.83	0.35	83
EDDS						
Bulimic Symptoms	14.11	9.15	13.80	8.95	0.16	83

*$p < .05$

Table 3

Mediating Effects Examining the Hypothesized Paths: Time 2 Outcome Variables

Mediator	Time 2 Outcome	(Cond→Med) *a*	(Med→Out) *b*	(Cond→Out) *c*	(Mediation Effect) *a*b*	CL low	CL high
Thin Ideal Internalization	Dieting	0.095	-0.103	-0.077	-0.010	-0.0911	0.0499
(IBSS-R)	Negative Affect	0.095	-1.911*	0.933	-0.181	-1.0512	0.5537
	Bulimic Symptoms	0.095	-1.368	-1.75	-0.130	-1.0051	0.5137
Thin Ideal Internalization	Dieting	1.679	0.041***	-0.186	0.069	-0.0260	0.1901
(Information)	Negative Affect	1.679	-0.082	0.892	-0.138	-0.6066	0.1579
	Bulimic Symptoms	1.679	0.346**	-2.859	0.581	-0.2188	1.6494
Thin Ideal Internalization	Dieting	-0.561	0.071***	-0.068	-0.040	-0.2850	0.2001
(Pressures)	Negative Affect	-0.561	0.135	0.829	-0.076	-0.7189	0.4691
	Bulimic Symptoms	-0.561	0.728***	-1.814	-0.408	-2.9092	2.0464
Thin Ideal Internalization	Dieting	0.214	0.062***	-0.137	0.013	-0.2189	0.2477
(General)	Negative Affect	0.214	0.187*	0.714	0.040	-0.7358	0.8449
	Bulimic Symptoms	0.214	0.649***	-2.532	0.139	-2.2807	2.5779
Thin Ideal Internalization	Dieting	-0.979	0.067*	-0.011	-0.065	-0.2228	0.0517
(Athlete)	Negative Affect	-0.979	0.201	0.951	-0.197	-0.9108	0.2436
	Bulimic Symptoms	-0.979	0.519*	-1.434	-0.508	-1.8402	0.4107
Body Dissatisfaction	Dieting	-0.083	0.651***	-0.012	-0.054	-0.2902	0.1713
(Trait)	Negative Affect	-0.083	1.703†	0.895	-0.141	-0.9131	0.5005
	Bulimic Symptoms	-0.083	6.313***	-1.282	-0.524	-2.7967	1.6566
Body Dissatisfaction	Dieting	0.179	-0.032**	-0.096	-0.006	-0.1447	0.1298
(State)	Negative Affect	0.179	-0.270***	0.802	-0.048	-1.1569	1.0430
	Bulimic Symptoms	0.179	-0.511***	-2.117	-0.091	-2.1349	1.9303

Note. † $p < .10$; *$p < .05$; ** $p < .01$; *** $p < .001$

Table 4

Mediating Effects Examining the Hypothesized Paths: Time 3 Outcome Variables

Mediator	Time 2 Outcome	(Cond→Med) *a*	(Med→Out) *b*	(Cond→Out) *c*	(Mediation Effect) *a*b*	CL low	CL high
Thin Ideal Internalization	Dieting	-0.115	-0.778**	0.010	0.089	-0.3905	0.6118
(IBSS-R)	Negative Affect	-0.115	-0.052*	-0.670	0.006	-1.1944	1.2246
	Bulimic Symptoms	-0.115	-5.449*	1.455	0.627	-2.7966	4.4294
Thin Ideal Internalization	Dieting	4.096	0.060**	-0.143	0.246	-0.2101	0.8395
(Information)	Negative Affect	4.096	-0.127	-0.142	-0.520	-2.8523	0.9740
	Bulimic Symptoms	4.096	0.321†	0.737	1.315	-1.2255	5.1922
Thin Ideal Internalization	Dieting	0.865	0.071*	-0.041	0.061	-0.3758	0.5361
(Pressures)	Negative Affect	0.865	-0.172	-0.515	-0.149	-1.8664	1.2681
	Bulimic Symptoms	0.865	0.373	1.296	0.323	-2.21681	3.2525
Thin Ideal Internalization	Dieting	0.966	0.059*	0.035	0.057	-0.3797	0.5322
(General)	Negative Affect	0.966	-0.144	-0.524	-0.139	-1.8454	1.2830
	Bulimic Symptoms	0.966	0.382†	1.651	0.369	-2.5893	3.6764
Thin Ideal Internalization	Dieting	-0.827	0.082†	0.154	-0.068	-0.4647	0.2576
(Athlete)	Negative Affect	-0.827	-0.286	-0.900	0.236	-1.1481	2.0745
	Bulimic Symptoms	-0.827	0.484	2.376	-0.400	-3.1254	1.7046
Body Dissatisfaction	Dieting	-0.308	0.340*	0.130	-0.105	-0.5860	0.3049
(Trait)	Negative Affect	-0.308	-0.080	-0.688	0.025	-1.2223	1.3419
	Bulimic Symptoms	-0.308	3.097**	2.416	-0.954	-5.1062	2.7073
Body Dissatisfaction	Dieting	2.861	-0.060*	0.288	-0.172	-0.6805	0.2263
(State)	Negative Affect	2.861	-0.257†	0.072	-0.735	-3.2839	1.0378
	Bulimic Symptoms	2.861	-0.614**	4.099	-1.757	-6.4311	2.2604

Note. † $p < .10$; *$p < .05$; ** $p < .01$; *** $p < .001$

Table 5

Mediating Effects Examining the Hypothesized Paths: Time 4 Outcome Variables

Mediator	Time 2 Outcome	(Cond→Med) *a*	(Med→Out) *b*	(Cond→Out) *c*	(Mediation Effect) *a*b*	CL low	CL high
Thin Ideal Internalization	Dieting	0.026	-0.374	0.761	-0.010	-0.4023	0.3677
(IBSS-R)	Negative Affect	0.026	-4.446*	2.87	-0.115	-3.9172	3.6084
	Bulimic Symptoms	0.026	0.336	-0.161	0.009	-2.1246	2.1705
Thin Ideal Internalization	Dieting	-0.374	0.044	0.748	-0.016	-0.4528	0.4002
(Information)	Negative Affect	-0.374	0.125	2.804	-0.047	-2.1275	1.9068
	Bulimic Symptoms	-0.374	0.202	5.918	-0.075	-3.0986	2.7554
Thin Ideal Internalization	Dieting	0.818	0.073*	0.700†	0.060	-0.4993	0.6498
(Pressures)	Negative Affect	0.818	0.145	2.630	0.119	-1.8152	2.3583
	Bulimic Symptoms	0.818	0.570†	5.582	0.466	-4.1477	5.4726
Thin Ideal Internalization	Dieting	-0.495	0.048†	0.796†	-0.024	-0.5008	0.4279
(General)	Negative Affect	-0.495	0.107	2.810	-0.053	-2.0862	1.8302
	Bulimic Symptoms	-0.495	0.358	6.304	-0.177	-4.1524	3.5274
Thin Ideal Internalization	Dieting	-2.646	0.061	0.916†	-0.161	-0.7024	0.1718
(Athlete)	Negative Affect	-2.646	-0.163	2.326	0.431	-2.0958	3.6123
	Bulimic Symptoms	-2.646	0.537	7.453	-1.421	-6.5688	1.8222
Body Dissatisfaction	Dieting	0.333	0.486**	0.477	0.162	-0.4646	0.8564
(Trait)	Negative Affect	0.026	-0.374	0.761	-0.010	-0.4023	0.3677
	Bulimic Symptoms	0.026	-4.446*	2.87	-0.115	-3.9172	3.6084
Body Dissatisfaction	Dieting	0.026	0.336	-0.161	0.009	-2.1246	2.1705
(State)	Negative Affect	-0.374	0.044	0.748	-0.016	-0.4528	0.4002
	Bulimic Symptoms	-0.374	0.125	2.804	-0.047	-2.1275	1.9068

Note. † $p < .10$; *$p < .05$; ** $p < .01$; *** $p < .001$

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